Packard

Model 61
Programming Timer

Bulletin 1091
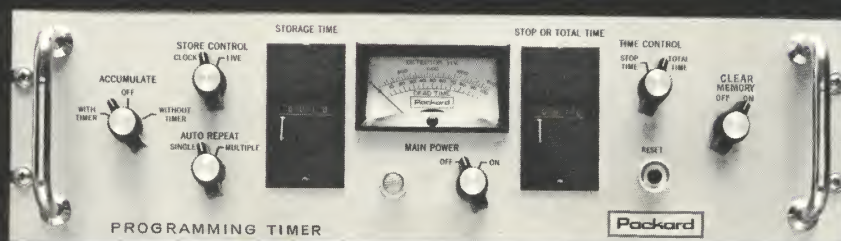

PROGRAMMING TIMER

General Description

The Packard Model 61 Programming Timer is intended to program the STORE, STOP and TOTAL time functions of the Packard Models 25 and 45 Computer-Memories. It can provide STORE time programming with automatic correction of the DEAD TIME while simultaneously providing "clock" time control of the TOTAL time period: a combination extremely useful for half-life studies. The Model 61 may be used to supplement the existing time control facilities on Packard Model 15 and 115 Analyzers. Either STORE and STOP times or STORE and TOTAL times may be posted individually on two mechanical registers; with time increments selectable from 0.1 to 999.9 minutes.

Principles of Operation

The 0.1 minute timer intervals are derived from a combination of a crystal oscillator (frequency of oscillation 5461.3 CPS) and a fifteen stage binary divider. Control pulses may be either applied sequentially to the two mechanical registers (in the case of STORE and STOP control) or simul-taneously to the two registers (in the case of STORE and TOTAL control). In either case, the pulses applied to the STORE register may be selected as "clock" or "live", while the pulses applied to the STOP or TOTAL register are always "clock". Each control pulse reduces by one increment the time period selected on the registers. In the case of STORE-STOP operation the completion of the rundown of either register automatically resets the other register for cyclic operation, while in STORE-TOTAL operation completion of the rundown of the TOTAL register resets both registers to their original state. In STORE-STOP operation, readout devices associated with an instrument system may be activated during the STOP portion of the cycle.

Specifications

CONTROL FACILITIES:
Time Control
> **STOP time:** selection of a program cycle which provides sequential STORE and STOP time periods.

> **TOTAL time:** selection of a program cycle which provides simultaneous STORE and TOTAL

time periods. STORE time may additionally be chosen as "live" or "clock", while TOTAL time is always "clock". The TOTAL time period must be chosen to be larger than the STORE time period including allowances for system DEAD TIME when applicable.

Auto Repeat

Multiple: the selected program cycle either STORE-STOP or STORE-TOTAL continues without interruption until manually terminated.
Single: only one selected program cycle either STORE-STOP or STORE-TOTAL is performed. Automatic termination occurs after completion of the first cycle of the selected program.

Store Control

"Live" time: time control of the STORE register modified to take into account the DEAD TIME of the associated instrumentation system; i.e., primary converters, Computer-Memories, pulse height analyzers, Buffer-Organizers, etc.
"Clock" time: time control of the STORE register as a function of the unmodified clock pulses only.

Clear Memory

OFF/ON: control facility which instructs Computer-Memory to clear out data accumulated during STORE time as a function of a data readout operation.

Accumulate

OFF: inhibits system STORE function.
With timer: places data acquisition of instrumentation system under control of Model 61 —Programming Timer.

Without timer: data acquisition can be achieved without recourse to control settings on Model 61.

Time Selection

2 presettable 4-decade registers are provided. 0.1 minute intervals may be posted on either register making possible a total selectable time range of from 0.1 to 999.9 minutes.

Time Generator

type:	quartz crystal
accuracy:	better than 1 part in 10^4
frequency:	5461.3 cycles
frequency divider:	15 series bistables operating in pure binary

Dead Time Inputs

amplitude:	$\pm$ 5 volts
threshold:	$\pm$ 2.5 volts $+$ 0.5 volts
negative pulses:	2 inputs ($-$5 volts)
positive pulses:	2 inputs ($+$5 volts)
impedance:	10 k ohms

Dead Time Meter

During STORE operation the average DEAD TIME is indicated on an included DEAD TIME meter.

External Mechanism Control

Relay contact outputs indicating STORE and STOP (TOTAL) time completions are provided.

Physical Characteristics

Dimensions

height:	5¼"
length:	19"
depth:	21"
weight:	35 lbs.

Power Consumption......................20 watts